

## ***Aedes Aegypti* on Wake Island**

By L. ROSEN, W. C. REEVES,<sup>1</sup> and T. AARONS<sup>2</sup>

(Presented by E. C. Zimmerman)

Wake is a coral atoll with a total land area of about four square miles, made up of three islets, Wake, Peale and Wilkes. The group is over 500 miles from the nearest habitable island, being 637 miles north of Kwajalein, 1,185 miles southeast of Midway, 2,130 miles due west of Honolulu, and 1,500 miles east of Guam. The island was in United States possession until December 1941 when it was captured by Japan. It was repossessed by the United States in September 1945.

All available records indicate that prior to December 24, 1941, there were no mosquitoes on Wake. A zoological expedition from the Bishop Museum visited the island in 1923 and made rather complete studies, but no mosquitoes were reported (1)<sup>3</sup>. Bohart and Ingram (2) in their exhaustive summary of the mosquitoes of the islands in the central Pacific make no mention of records from Wake.

In October 1947 the Alameda County Mosquito Abatement District received a collection of mosquitoes from Wake Island. The specimens were sent to Harold F. Gray, Engineer, Alameda County Mosquito Abatement District by Rodney R. Beard, M.D., Medical Director, Pacific-Alaska Division, Pan American Airways System. T. Aarons made a tentative identification of *Aedes aegypti* which was confirmed by Dr. Richard M. Bohart, University of California at Davis.

At the suggestion of W. C. Reeves, in January 1948 the senior author while visiting this island made more extensive collections of adult mosquitoes and larvae. All were identified by Reeves as typical *Aedes aegypti* (Linn.). Collections of both adults and larvae were made on Peale, but adults only were found on Wake. The adult mosquitoes were collected from human beings.

While the average annual rainfall is 33 inches, until recently there has been no fresh water available on the island. This is due to the low elevation, porosity of coral and sand, and limited vegetation, the shrub *Scaevola frutescens* predominating. In 1935 Pan American World Airways established an air base on Wake, and fresh water was first stored on the island. The run-off from roofs of buildings was collected and stored in covered cisterns with

<sup>1</sup> George Williams Hooper Foundation, University of California, San Francisco.

<sup>2</sup> Alameda County Mosquito Abatement District, Oakland.

<sup>3</sup> Figures in parentheses refer to literature cited at the end of this article.

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screened vents. During their occupation, the Japanese built a number of small concrete catchment basins and other works in which rain water collects.

Larval collections during the present studies were all from abandoned Japanese concrete cisterns, water storage drums, and various discarded metal containers in which rain water had collected. In the immediate vicinity of the living quarters of personnel, water barrels and storage tanks have either been screened or covered with heavy oil.

Inquiries as to the biting activities of these mosquitoes disclosed that they were bothersome in certain brushy areas in the daytime and were seen only occasionally in the camp area on windless nights.

It is impossible at this time to determine how, when and by whom this mosquito was first imported to this isolated island. However, it is an outstanding record of the dependence of *Aedes aegypti* on man's means of transportation for its spread and the tendency of man to create suitable larval habitats.

The only available source of blood for these mosquitoes are the residents of Wake, large numbers of sea birds, rats, and a few cats and dogs. From available records it would appear that they feed on wild animals in most instances.

While no mosquito-borne disease has been reported, the importation of a case of dengue fever could potentially result in further cases. In view of the importance of Wake as an international air stop it will probably be desirable to eradicate this mosquito from the island. Because of the limited size of the island and the type of breeding place involved, such eradication should be easy if carried out by the standard methods of *Aedes aegypti* control.

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1. Bryan, E. H., Jr. Insects of Hawaii, Johnston Island and Wake Island. B. P. Bishop Museum, Bull. 31, 1926.
  2. Bohart, R. M. and Ingram, R. L. Mosquitoes of Okinawa and Islands in the Central Pacific. Navmed 1055: 1-110, 1946.